

CLAIMS

1. An inspection probe for inspecting electrical properties of a semiconductor device (1), comprising:

a base member (4);
wiring layers (5) mounted on the base member;
probe pins (3), electrically connected to the wiring layers, protruding from the base member;
first metal layers (10) provided to the tips of the probe pins; and
second metal layers (9) formed on the wiring layers,
wherein the first metal layers (10) and the second metal layers (9) are separated from each other.

2. The inspection probe according to Claim 1, wherein the first metal layers are made of a material having good contact properties selected depending on a material of external terminal electrodes of the semiconductor device.

3. The inspection probe according to Claim 1, wherein the second metal layers have a volume resistivity less than that of the wiring layers.

4. The inspection probe according to Claim 1, wherein the base member has a plurality of the probe pins.

5. The inspection probe according to Claim 1, wherein the first metal layers (10) and the second metal layers (9) are made of the homogeneous material.

6. The inspection probe according to Claim 1; wherein the first metal layers (10) and the second metal layers (9) are made of heterogeneous material.

7. The inspection probe according to any one of Claims 1 to 6, wherein the first metal layers (10) have hardness higher than that of the external terminal electrodes (2) of the semiconductor device.

8. The inspection probe according to any one of Claims 1 to 6, wherein a region for forming each first metal layer (10) has a width wider than or equal to half of the

width of the probe pins and a length longer than or equal to the sum of 1.0 time the size of the electrodes, the distance that the inspection probe is moved after the inspection probe coming in contact with the electrodes, the longitudinal positional tolerance of the probe pins, and the length determined based on the positional tolerance of the electrodes.

9. The inspection probe according to any one of Claims 1 to 6, wherein the probe pins form an angle of 0 to 45 degrees with respect to a face on which the electrodes of the semiconductor device are formed.

10. The inspection probe according to Claim 1, further comprising a flexible, electrically connectable wiring substrate placed between the base member (4) and the inspection substrate and a backup plate (7), mounted on the inspection substrate, for mounting the base member (4) thereon if the electrodes of the semiconductor device are arranged at sides thereof, correspond to multiple pins, and must be connected to the inspection substrate.

11. The inspection probe according to Claim 10, further comprising a support substrate (14) which is integrated with peripheral portions of the base member (4) with an adhesive member placed therebetween and which is made of the same material as a material of the base member, said support substrate being mounted on the inspection substrate (8), wherein the backup plate (7) has a protrusive portion at a center area thereof such that the probe pins (3) form a predetermined angle with respect to the electrodes (2) of the semiconductor device (1).

12. The inspection probe according to Claim 11, wherein the backup plate (7) and the inspection substrate (8) each has a perforations (15) partly.

13. The inspection probe according to Claim 11, wherein the base member (4) has warpage-reducing means (41, 42, and 43) for reducing the warpage thereof.

14. The inspection probe according to Claim 13, wherein the warpage-reducing means include a warpage-correcting plate (41) attached to the rear face of the base member (4).

15. The inspection probe according to Claim 13, wherein the warpage-reducing means include notches (42) formed at end faces of the base member (4).

16. The inspection probe according to Claim 13, wherein the warpage-reducing means include notches (43) formed at edges of the base member (4) at which bending occurs.

17. The inspection probe according to Claim 13, wherein the warpage-reducing means include a plurality of notches (43), formed in the rear face of the base member (4), having a depth insufficient to cause negative effects on the main surface of the base member and wires.

18. The inspection probe according to Claim 17, wherein the plurality of notches (43) extend laterally.

19. The inspection probe according to Claim 17, wherein the plurality of notches (43) extend longitudinally.

20. The inspection probe according to Claim 17, wherein the plurality of notches (43) extend laterally and longitudinally.